African Invertebrates 65(2): 75–83 (2024)
DOI: 10.3897/AfrInvertebr.65.137760

Research Article

Foordus gen. nov., a new genus of euophryine jumping spider from South Africa (Salticidae, Araneae)

Galina N. Azarkina[1,2]

1 *Laboratory of Systematics of Invertebrate Animals, Institute of Systematics and Ecology of Animals, Siberian Branch of the Russian Academy of Sciences, Frunze Street 11, Novosibirsk 630091, Russia*

2 *Department of Zoology and Centre for Invasion Biology, University of Venda, Thohoyandou, 0950, South Africa*

Corresponding author: Galina N. Azarkina (urmakuz@gmail.com)

Abstract

A new monotypic genus *Foordus* **gen. nov.** with *Foordus stefani* **sp. nov.** as the type species is described. A short discussion on other Salticidae with disjunctive distributions is provided.

Key words: Afrotropics, description, KwaZulu-Natal, new species

OPEN ACCESS

This article is part of:
Gedenkschrift for Prof. Stefan H. Foord
Edited by Galina Azarkina, Ansie Dippenaar-Schoeman, Charles Haddad, Robin Lyle, John Midgley, Caswell Munyai

Academic editor: Ansie Dippenaar
Received: 24 September 2024
Accepted: 19 October 2024
Published: 8 November 2024

ZooBank: https://zoobank.org/C0E6B6AA-E2E4-49B0-999A-B9AC6FD813E5

Citation: Azarkina GN (2024) *Foordus* gen. nov., a new genus of euophryine jumping spider from South Africa (Salticidae, Araneae). African Invertebrates 65(2): 75–83. https://doi.org/10.3897/AfrInvertebr.65.137760

Copyright: © Galina N. Azarkina.
This is an open access article distributed under terms of the Creative Commons Attribution License (Attribution 4.0 International – CC BY 4.0).

Introduction

Euophryines is one of the largest groups among jumping spiders (Salticidae), reported from all continents other than Antarctica (Zhang and Maddison 2015). Currently, 6 genera and 50 species are known from South Africa (Dippenaar-Schoeman et al. 2023). Four genera among these are confined to Southern Africa (*sensu* Dippenaar-Schoeman and Jocqué 1997), with most species recorded from South Africa.

The tribe Euophryini of the Afrotropical Region was revised ten years ago, with two new genera and thirty three new species described (Wesołowska et al. 2014). The largest genus is *Thyenula* Simon, 1902 with 20 species followed by *Euophrys* C.L. Koch, 1834 (16 species). Two genera, *Rumburak* Wesołowska, Azarkina & Russell-Smith, 2014 (7 species) and the monotypic *Yimbulunga* Wesołowska, Azarkina & Russell-Smith, 2014, are found only in South Africa. *Chinophrys* Zhang & Maddison, 2012 is the only other genus with only one species known from South Africa, most species of which are distributed in China (WSC 2024). Yet, it is most likely that many species or even genera still remain undescribed.

In this paper I report another monotypic new genus of tiny euophryine, *Foordus* gen. nov. from South Africa.

Material and methods

The specimens used in this study are shared between the following collections (curator names are in parentheses):

ISEA Institute of Systematics and Ecology of Animals SB RAS, Novosibirsk, Russia (G.N. Azarkina)
MMUM Manchester Museum, University of Manchester, United Kingdom (D. Arzuza Buelvas)
NCA National Collection of Arachnida, Pretoria, South Africa (A.S. Dippenaar-Schoeman, P. Marais)
SMF Senckenberg Natural History Museum, Frankfurt am Main, Germany (P. Jäger)
TMSA Ditsong National Museum of Natural History, Pretoria, South Africa (T. Bird)
ZISP Zoological Institute RAS, St Petersburg, Russia (D.V. Logunov)

Specimens were studied in 70% ethanol and a description of their coloration refers to that of preserved specimens. The epigyne was detached and macerated in 10% KOH overnight. After photos were taken and drawings were made, dissected parts were stored in microvials with the specimens. All drawings were made with the aid of a reticular eyepiece attached to a MBS–10 stereomicroscope. Photographs of preserved specimens were taken with a Canon EOS 550D camera attached to a Zeiss Stemi–2000 stereomicroscope. Stacked images were combined using Helicon Focus. The drawings were edited in Adobe Photoshop and Corel Draw.

The abbreviations used in the text are as follows:

AME anterior median eyes;
Ap apical;
BH basal haematodocha;
C cymbium;
D dorsal;
DH distal haematodocha;
E embolus;
Fm femur;
Mt metatarsus;
Pr prolateral;
Rt retrolateral;
SR salticid radix;
Tg tegulum;
Ti tibia;
V ventral.

The sequence of leg segments in measurement data is as follows: femur + patella + tibia + metatarsus + tarsus (total). All measurements are in millimeters (mm). Leg setation follows Ono (1988). Terminology follows

Zhang and Maddison (2015) and Azarkina and Haddad (2020). The distribution map was produced using the online mapping software SimpleMappr (Shorthouse 2010).

Results

Family Salticidae Blackwall, 1841
Subfamily Salticinae Blackwall, 1841
Tribe Euophryini Simon, 1901

***Foordus* gen. nov.**
https://zoobank.org/5BD45DF7-9EB3-4C21-9245-AE51BBF03366

Type species. *Foordus stefani* sp. nov., designated here.

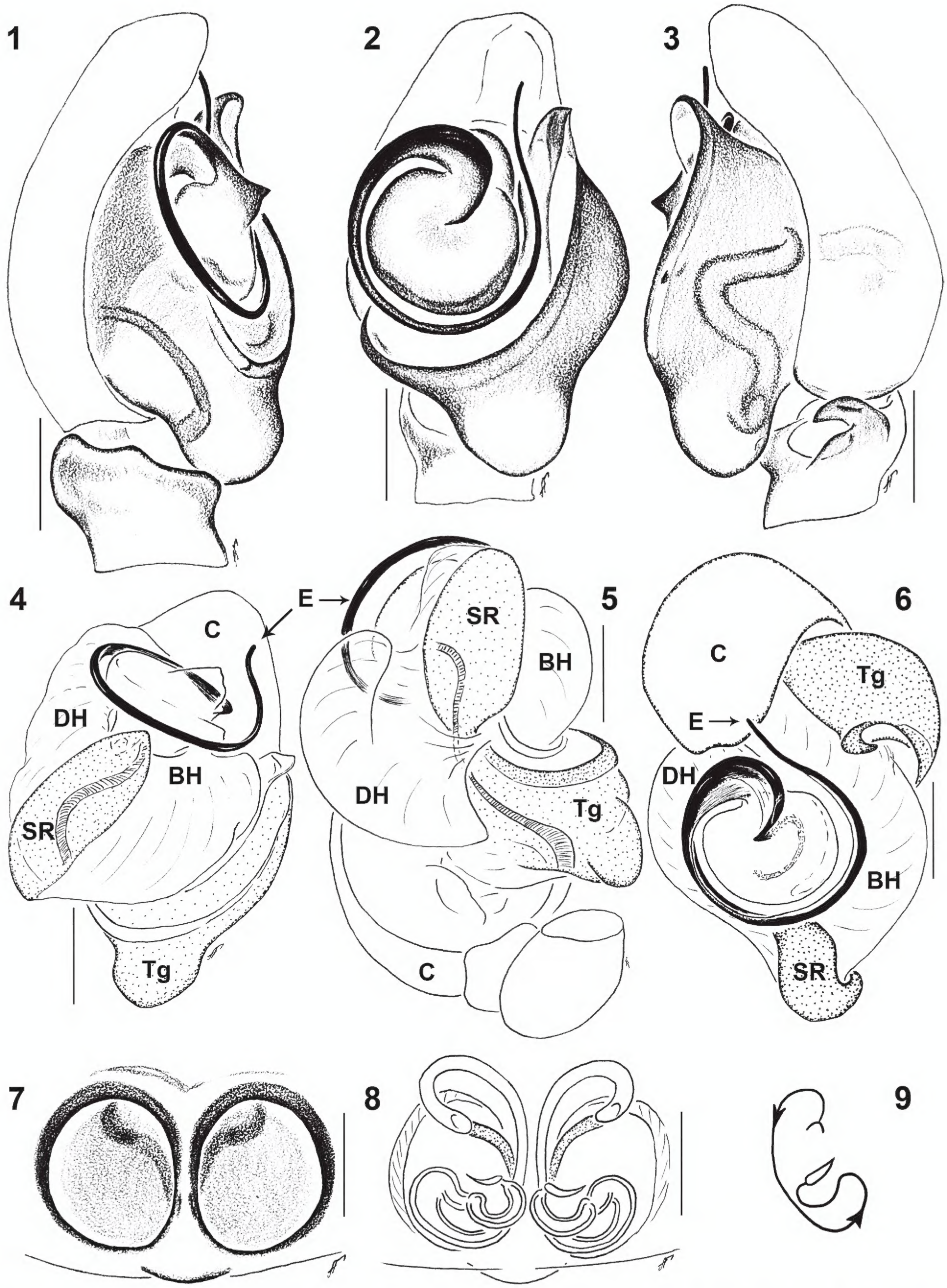
Diagnosis. The genus *Foordus* gen. nov. is most similar to the South-Asian genus *Cytaea* Keyserling, 1882 in having a retrolateral outgrowth of the tegulum near the embolic coil apically (cf. Figs 1–3 and Trębicki et al. 2021: figs 5E, 8E) but differs from *Cytaea* in an embolic division that has an outgrowth at the base which is absent in *Cytaeae alburna* Keyserling, 1882 (cf Figs 1, 3 and Trębicki et al. 2021: figs 5D–G). Females differ in having a wider epigynal septum (Fig. 7) while *Cytaea* has a thin median guide (Fig. 7 and Trębicki et al. 2021: figs 5A–B). Moreover, all members of the genus *Cytaea* are larger in size and have fissidentate chelicerae while *Foordus* gen. nov. has unidentate chelicerae.

Etymology. The new genus is a patronym in honour of the late Prof. Stefan Hendrik Foord. Gender masculine.

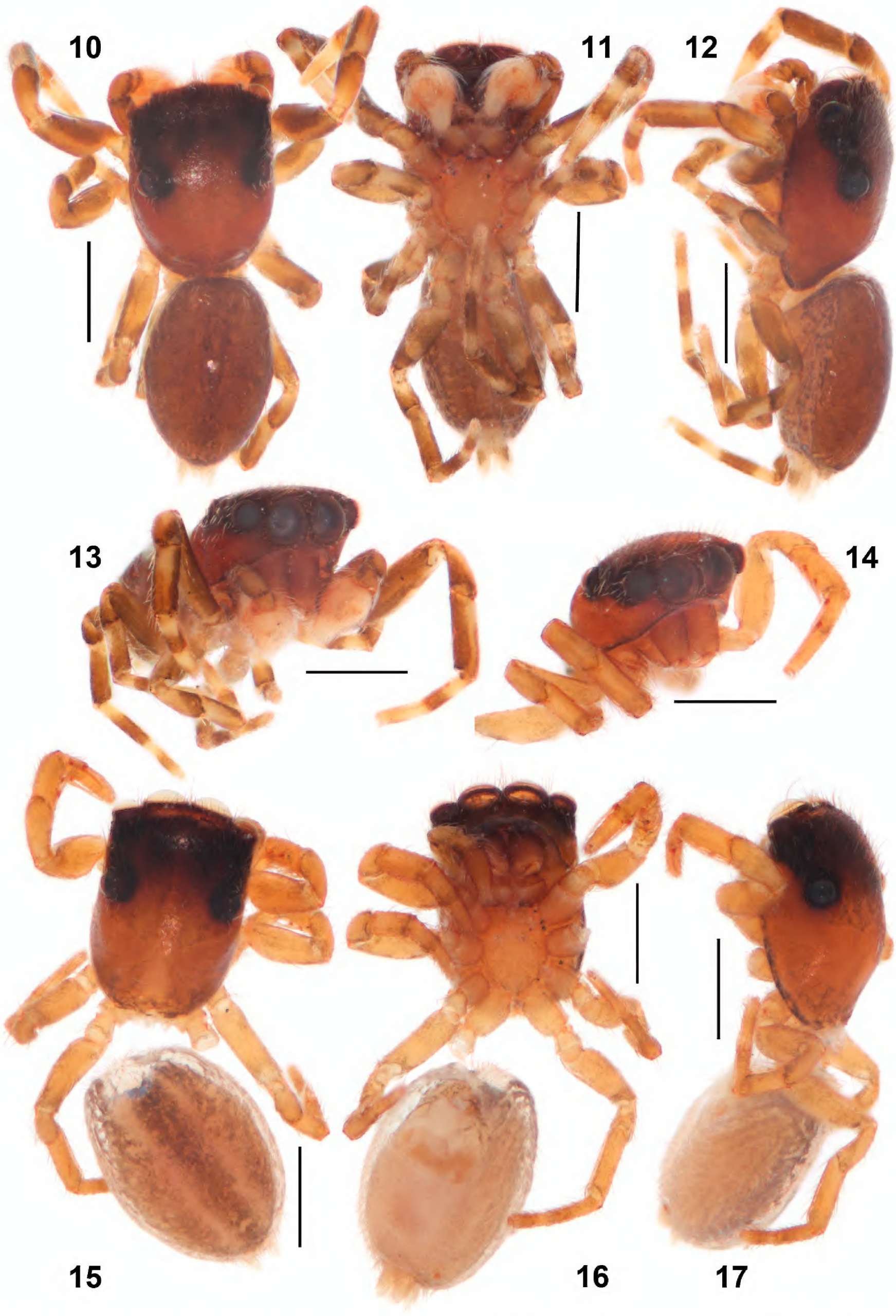
Definition. Tiny spiders with body length from 2.05 mm in male to 2.40 mm in female. Sexes similar in general body shape, males have a shiny scutum that covers the dorsal side of the abdomen (Figs 10, 12). Carapace rather low, with very low clypeus. Chelicerae unidentate, with two teeth promarginally and one tooth retromarginally. Legs subequal in size and length. Leg formula: I–IV/III/II in males and IV/I/III/II in female. Female palp of general form, without either macrosetae or an apical claw. Male palp: cymbium more or less round, of usual euophryine form. Tibia short, with a small ventral bump, retrolateral tibial apophysis bent ventrally at almost 90° (Fig. 3). Embolic division forms a round coil prolatero-ventrally, with salticid radix placed prolaterally (Figs 1, 2). Embolic coil has triangular outgrowth at the base, forming a single circle (Figs 1, 3, 4). Tegulum and salticid radix separated from each other by the basal haematodocha, embolic coil separated from salticid radix by the distal haematodocha (Figs 4–6). Female copulatory organs: Median septum narrow, with two round windows with wings on outer rim and openings to copulatory ducts close to its anterior end, supported by stiffeners. Vulva with long copulatory ducts and tube-shaped spermathecae, fertilization ducts located in the middle part near septum.

Composition. Monotypic genus, *Foordus stefani* gen. and sp. nov.

Distribution. Known only from the type location (KwaZulu-Natal Province, South Africa).



Figures 1–9. *Foordus stefani* gen. and sp. nov.: Male holotype (**1–6**) and female paratype (**7–9**) **1** male palp, prolateral **2** same, ventral **3** same, retrolateral **4** expanded male palp, ventral **5** same, ventro-basal **6** same, apical **7** epigyne, ventral **8** epigyne, dorsal **9** Diagrammatic course of the insemination ducts. Scale bars: 0.1 mm.



Figures 10–17. *Foordus stefani* gen. and sp. nov.: Male holotype (**10–13**) and female paratype (**14–17**) **10** male habitus, dorsal **11** same, ventral **12** same, same, lateral **13** same, frontal **14** female habitus, frontal **15** same, dorsal **16** same, ventral **17** same, lateral. Scale bars: 0.5 mm.

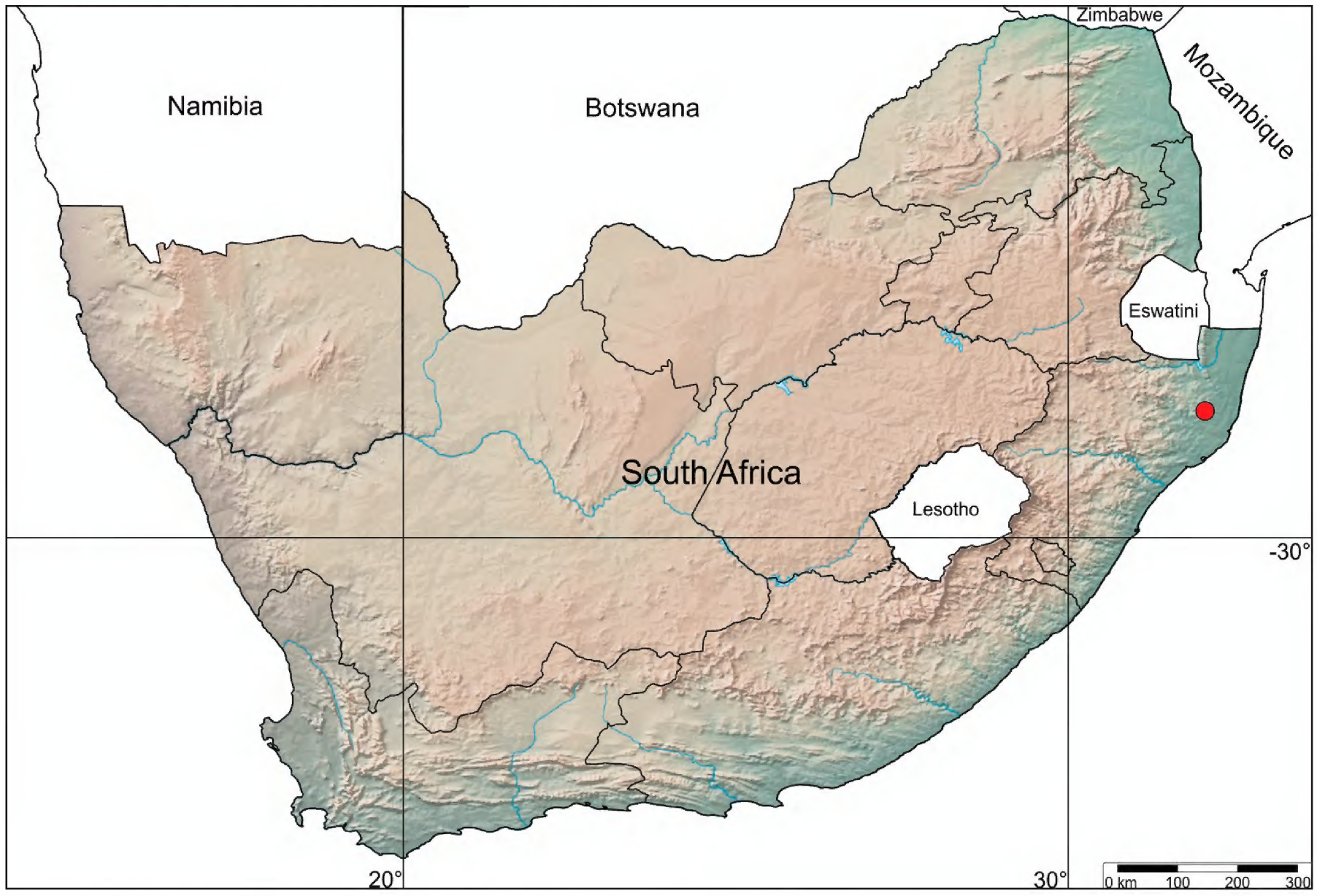


Figure 18. Distribution of the genus *Foordus* gen. nov.

***Foordus stefani* sp. nov.**

https://zoobank.org/9AD094F4-36D4-4A56-B6DF-403C782AAD80

Figs 1–18

Type material. ***Holotype.*** SOUTH AFRICA • ♂; *KwaZulu-Natal Province*; Hluhluwe Imfolozi Game Reserve; 28.0833°S, 32.0667°E; 18 Nov. 1992; S. Endrödy-Younga leg.; TMSA 25041.

Paratypes. SOUTH AFRICA • 2♂; same with Holotype; TMSA 22228 • 1♂; same; TMSA 22218 • 1♂1♀; same; TMSA 22209 • 2♂; same but 18 Nov. 1992; TMSA 22240 • 1♂; same; ISEA 001.9106 • 1♂; same; NCA 2024/18 • 1♂; same; MMUE G7709.1 • 1♂; same; SMF • 1♂; same; ZISP ARA_ARA_0000822.

Diagnosis. Same with generic.

Description. Male. Total length 2.05. Carapace 1.05 long, 0.78 wide. Abdomen 1.00 long, 0.65 wide. Ocular area 0.45 long, 0.70 wide anteriorly, 0.70 wide posteriorly. Cheliceral length 0.35. Clypeal height 0.05. Height at PLE 0.45. Diameter of AME 0.25. Length of leg segments: I 0.55 + 0.35 + 0.40 + 0.30 + 0.25 (1.85). II 0.45 + 0.30 + 0.28 + 0.20 + 0.25 (1.48). III 0.45 + 0.25 + 0.30 +0.30 + 0.25 (1.55). IV 0.55 + 0.30 + 0.35 + 0.35 + 0.30 (1.85). Leg setation: I: Fm d 0-1-1, Ti v-pr 0-1-1 ap, v-rt 1-1-1 ap, Mt v 2-2 ap. II: Fm d 0-1-1, Ti v-pr 1-1-0, Mt v 2-2 ap. III: Fm d 0-1-1, pr & rt 0-1-0, v-pr 0-1-1 ap, Mt pr & rt 0-1 ap, v 0-2 ap. IV: Fm d 0-1-1, Ti v-pr 0-0-1 ap, Mt pr 0-0-1, v 0-2 ap. Colouration (in alcohol, Figs 10–13). Carapace brown, with dark brown eye field and dark brown rings around eyes. Clypeus brown. Chelicerae light-brown, pale apically. Sternum yellow-brown. Abdomen with dark brown shiny scutum that covers the entire abdomen dorsally. Venter brown. Book lung covers yellow-brown. Spinnerets brown posteriorly, yel-

low anteriorly. All legs yellow. Femora of all legs dark brown pro- and retrolaterally, remaining dark brown distally. Palps dark brown, cymbium yellow, covered with short white setae. Male palps as in Figs 1–6: similar to generic description.

Female. Total length 2.10. Carapace 1.10 long, 0.75 wide. Abdomen 1.30 long, 0.85 wide. Ocular area 0.45 long, 0.75 wide anteriorly, 0.73 wide posteriorly. Cheliceral length 0.30. Clypeal height 0.05. Height at PLE 0.40. Diameter of AME 0.25. Length of leg segments: I 0.55 + 0.30 + 0.35 + 0.25 + 0.25 (1.70). II 0.45 + 0.25 + 0.25 + 0.20 + 0.25 (1.40). III 0.45 + 0.25 + 0.25 + 0.30 + 0.25 (1.50). IV 0.55 + 0.25 + 0.40 + 0.35 + 0.30 (1.85). Leg setation: I: Ti v-pr 0-1-1 ap, v-rt 1-1-1 ap, Mt v 2-2 ap. II: Ti v-pr 1-1-0, Mt v 2-2 ap. III: Ti pr & rt 0-1-0, v-pr 0-0-1 ap, Mt pr & rt 0-1 ap, v 0-2 ap. IV: Ti rt 0-1-0, v-pr 0-0-1 ap, Mt rl 0-0-1, v-pr 0-1 ap. Colouration (in alcohol, Figs 14–17). Carapace brown, with dark brown eye field and black rings around eyes. Thoracic part with yellow-brown longitudinal band medially. Clypeus brown. Chelicerae yellow-brown. Sternum brownish-yellow. Labium and endites brownish-yellow, pale apically. Abdomen grey-brown dorsally, with two thin yellow longitudinal bands medially. Venter pale-yellow. Spinnerets and book-lung covers pale yellow. All legs and palps dark yellow, tinged with brown. Epigyne and vulva as in Figs 7–9, similar to generic description.

Etymology. The new species is named after the South African arachnologist, the late Prof. Stefan Hendrik Foord, for his contribution to African arachnology.

Discussion and conclusion

The new genus *Foordus* gen. nov. is similar to *Cytaea*, distributed from India to Australia and Samoa to the East and South (WSC 2024). A few genera are known with a distribution in the Afrotropics and South-East Asia. They include *Chinophrys* with one species in South Africa and the rest of the species in SE Asia and *Orsima* Simon, 1901 with one species in West Africa and two species in SE Asia. Previously some species that have a similar distribution (Afrotropics and SE Asia) were carefully reexamined and found to belong to different genera. For example, two species of *Afromarengo* Benjamin, 2004 were first described in *Marengo* Wanless, 1978 and later moved to *Afromarengo* that occurs only in the Afrotropics (Wanless 1978; Benjamin 2004). Likewise, *Ballagascar insularis* G.W. Peckham & E.G. Peckham, 1885 and *Wandawe benjamini* (Wesołowska and Haddad 2013) were originally placed in *Colaxes* Simon, 1900 (Wesołowska 2019 and Wesołowska and Haddad 2013) and later moved to other genera (Azarkina and Haddad 2020).

With *Foordus stefani* gen. and sp. nov. the number of euophryines from South Africa is raised to 7 genera and 51 species in total. Two of the genera are monotypic, *Foordus* gen. nov. (with *F. stefani* sp. nov.) and *Yimbulunga* (with *Y. foordi* Wesołowska, Azarkina & Russell-Smith, 2014). Thus, among these seven genera, five genera are only found in the Afrotropics, while two genera, *Chinophrys* and *Euophrys*, are found outside of Afrotropics. The genus *Euophrys* is most likely polyphyletic and some of the African members will in future be moved to other, undescribed genera.

Despite a considerable similarity with *Cytaea,* I decided to describe a new genus of euophryine jumping spider, *Foordus* gen. nov. until further material is found and a full detailed diagnosis for the genus *Cytaea* is provided (it seems that the genus *Cytaea* is polyphyletic). Molecular methods may help to resolve this issue in the future.

Acknowledgements

The curators of the Ditsong Museum (Audrey Ndaba and Tharina Bird) are thanked for loaning the material at their disposal for this study. Robyn Lyle (Pretoria, South Africa) is thanked for assistance in obtaining material from the Ditsong Museum. I wish to thank Ansie Dippenaar-Schoeman, Robin Lyle and Petro Marais for providing facilities during my stay in Pretoria. Dmitri Logunov is thanked for short discussion on the generic status. Special thanks go to Anthony Russell-Smith (United Kingdom) for editing the English of the final draft. This paper would not have been possible without Charles Haddad's help and a grant from the National Research Foundation of South Africa in the Competitive Program for Rated Researchers (#95569). Ansie Dippenaar-Schoeman, G.B. Edwards (USA) and anonymous referee are thanked for their critical comments that improved the paper.

Additional information

Conflict of interest

The author has declared that no competing interests exist.

Ethical statement

No ethical statement was reported.

Funding

This work was partly supported by Federal Fundamental Scientific Research Program, project 1021051703269-9-1.6.12 and a grant from the University of Venda RPC committee (Grant no. P109) and funding through the NRF Chair in Biodiversity Value and Change. The KwaZulu-Natal Museum funded the production of this publication.

Author contributions

The author solely contributed to this work.

Author ORCIDs

Galina N. Azarkina https://orcid.org/0000-0002-9328-3913

Data availability

All of the data that support the findings of this study are available in the main text.

References

Azarkina GN, Haddad CR (2020) Partial revision of the Afrotropical Ballini, with the description of seven new genera (Araneae: Salticidae). Zootaxa 4899(1): 15–92. https://doi.org/10.11646/zootaxa.4899.1.4

Benjamin SP (2004) Taxonomic revision and phylogenetic hypothesis for the jumping spider subfamily Ballinae (Araneae, Salticidae). Zoological Journal of the Linnean Society 142(1): 1–82. https://doi.org/10.1111/j.1096-3642.2004.00123.x

Dippenaar-Schoeman AS, Jocqué R (1997) African Spiders: An Identification Manual. Plant Protection Research Institute Handbook 9. Plant Protection Research Institute, Pretoria, 392 pp.

Dippenaar-Schoeman AS, Haddad CR, Lotz LN, Booysen R, Steenkamp RC, Foord SH (2023) Checklist of the spiders (Araneae) of South Africa. African Invertebrates 64(3): 221–281. https://doi.org/10.3897/AfrInvertebr.64.111047

Ono H (1988) A revisional study of the spider family Thomisidae (Arachnida, Araneae) of Japan. National Science Museum, Tokyo, 252 pp.

Shorthouse DP (2010) SimpleMappr, an online tool to produce publication-quality point maps. http://www.simplemappr.net [accessed on 15.09.2024]

Trębicki Ł, Patoleta BM, Dabert M, Żabka M (2021) Redescription of type species of the genus *Cytaea* Keyserling, 1882 (Araneae: Salticidae) – an integrative approach. The European Zoological Journal 88(1): 933–947. https://doi.org/10.1080/24750263.2021.1961029

Wanless FR (1978) A revision of the spider genus *Marengo* (Araneae: Salticidae). Bulletin of the British Museum, Natural History. Zoology 33: 259–278. https://doi.org/10.5962/p.28739

Wesołowska W (2019) *Colaxes insularis* (Peckham & Peckham, 1885) is a valid species of jumping spiders (Araneae: Salticidae: Ballinae). Israel Journal of Entomology 49: 57–61.

Wesołowska W, Haddad CR (2013) New data on the jumping spiders of South Africa (Araneae: Salticidae). African Invertebrates 54: 177–240.

Wesołowska W, Azarkina GN, Russell-Smith A (2014) Euophryine jumping spiders of the Afrotropical Region—new taxa and a checklist (Araneae: Salticidae: Euophryinae). Zootaxa 3789(1): 1–72. https://doi.org/10.11646/zootaxa.3789.1.1

WSC (2024) World Spider Catalog. Version 25.5. Natural History Museum Bern. http://wsc.nmbe.ch [accessed on 15.09.2024]

Zhang JX, Maddison WP (2015) Genera of euophryine jumping spiders (Araneae: Salticidae), with a combined molecular morphological phylogeny. Zootaxa 3938(1): 1–147. https://doi.org/10.11646/zootaxa.3938.1.1